This is Your Brain on Diabetes

Our body’s cells need glucose (sugar) for energy. We get glucose from what we eat and drink every day. In order to use glucose, our bodies need insulin. Insulin, a hormone made in the pancreas, helps our body’s cells take the glucose that is floating around in our bloodstream and gets it into our body’s cells to use for energy. If there’s too much sugar in our bloodstream our pancreas will make more insulin to try to push more sugar into our cells. The more insulin levels rise in our blood, the more likely our cells will be to become insulin resistant or stop responding to insulin. When that happens, our cells don’t get energy and start to starve.

Our brain helps us to make sense of what we see, hear, smell, taste and touch, and helps us to think, learn and understand. Our brain is an energy hog that needs a regular supply of glucose (sugar), but, the higher our blood insulin levels are, the harder it can be for insulin to get into the brain. This is because the receptors responsible for moving insulin across the blood-brain barrier can build up a resistance to insulin, blocking the amount of insulin allowed into the brain. While most brain cells don’t need insulin in order to absorb sugar, they do need insulin in order to process sugar. Starved brain cells can cause memory loss and confusion.

Which brain cells die off first? The hippocampus is our brain’s memory center. Hippocampus cells need so much energy to do their important work that they need added boosts of glucose. These added glucose boosts need insulin, making the hippocampus very sensitive when insulin is low. When the cells of the hippocampus can’t get enough energy, we start to have memory problems.

Diabetes and Alzheimer’s Disease are connected in ways that aren’t yet fully understood. While not all research confirms the connection, many studies show that people with diabetes, especially type 2 diabetes, are at higher risk of someday developing Alzheimer’s or other dementias that affect memory and thinking. The bottom line is that careful diabetes control is important. High blood glucose may not feel terrible, but it might cause problems with how your brain works and dementia.

Working with your health care provider to manage your diabetes, or prevent it all together, is an important way to avoid or reduce diabetes complications. The things we do to prevent or manage diabetes may help to keep your brain in working right too!

Here are some tips to help you feed your brain and prevent or manage your diabetes:

✔ Keep your body active. Studies show that regular physical activity can delay and even slow down the progression of brain diseases like Alzheimer’s Disease. Not only
does physical activity make your physical health and your mood better, but it can also boost your brain health. Try aerobic exercise, strength training, yoga, and stretching.

- **Keep your mind active.** Learn new things and do mental activities (use your brain!) such as puzzles, drawing, reading, playing a game, crafts or hobbies. Get out and be around people, volunteer at a shelter. Having a social network stimulates your mind and improves your mood.

- **Eat less meat.** Eat more plant-based foods and cut down on meat, like the [Choose MyPlate](https://www.choosemyplate.gov) guidelines suggest. That means half of your plate should be fruits and vegetables; the other half grains and protein.

- **Cut back on sugar.** Sugar is linked with type 2 diabetes, so it’s best to watch how much sugar (from foods or drinks) you put into your body every day. Eating too many [carbohydrates](https://www.choosemyplate.gov/involve/dash/choosing-carbohydrates), which turn into sugar in your body, is what causes blood sugar and insulin levels to rise, placing us at high risk for insulin resistance and Alzheimer’s Disease.

- **Cook more at home.** Learning to cook (with fresh, non-processed foods) allows you to eat healthier foods and it can save you money. Learning to cook is a valuable skill that does more than just help your waistline. It actually helps keep your mind sharp. Planning what to cook, getting groceries, and organizing your prep and cooking time help with brain functioning!

- **Avoid nitrates.** Research shows that there is a link between Alzheimer’s and eating foods that have nitrates in them. Protect yourself by avoiding foods that list sodium nitrite on the label. Processed foods including cheese, hot dogs, ground beef, and smoked meats like bacon contain nitrates.

- **Stop smoking.** This should be a “no-brainer”. Smoking reduces blood flow to the brain, damaging or killing brain cells. For help with quitting tobacco- visit the [Tennessee Tobacco Quitline](https://www.tn.gov/health/tn-hp/tn-state-of-health/tennessee-tobacco-quitline) website.

- **Get at least 8 hours of restful sleep every night.** Studies show poor sleep is a risk factor for poor brain health and for Alzheimer’s Disease. Sleep serves to reboot and repair our body’s cells, clear waste from the brain, and support learning and memory. [Deep sleep](https://www.alz.org/dementia/why-is-deep-sleep-important) is when the brain heals; so catch some “Zzzzzzzzzz!”

Want to know more? Visit:

[Alzheimer’s Disease and Type 2 Diabetes](https://www.alz.org/disease) - Alzheimer’s Association
Diabetes and Alzheimer’s Linked - Mayo Clinic

12 Ways to Keep Your Brain Young - Harvard Health Publishing

Caffeine and a Health Diet May Boost Memory, Thinking Skills; Alcohol’s Effect Uncertain - Harvard Health Publishing

Memory May Be Protected By Keeping Blood Sugar Levels Low - CBS Health Watch

How Insulin Works in the Body - video